

[Oral Argument Not Yet Scheduled]

No. 22-1337 (Consolidated with No. 23-1001)

IN THE UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT

INTERNATIONAL DARK-SKY ASSOCIATION, INC., ET AL.,
Appellants,

v.

FEDERAL COMMUNICATIONS COMMISSION,
Appellee,

SPACE EXPLORATION HOLDINGS, LLC,
Intervenor.

On Appeal from the Federal Communications Commission
IBFS File Nos. SAT-LOA-20200526-00055 and
SAT-MOD-20210818-00105

**SPACE EXPLORATION HOLDINGS, LLC'S
RESPONSE BRIEF AS INTERVENOR FOR APPELLEE**

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CERTIFICATE AS TO PARTIES, RULINGS, AND RELATED CASES

A. Parties and *Amici*

Except for *amicus curiae* TechFreedom, all parties, intervenors, and *amici* appearing before the Federal Communications Commission and in this Court are listed in the Brief for Appellant International Dark-Sky Association, Inc.

Pursuant to Federal Rule of Appellate Procedure 26.1 and Circuit Rule 26.1, counsel for Intervenor Space Exploration Holdings, LLC (“SpaceX”) states that SpaceX is a direct wholly owned subsidiary of Space Exploration Technologies Corp., a privately held Delaware corporation in which the sole shareholder who is the beneficial owner of a 10% or greater interest is Elon Musk, as trustee of a private trust.

B. Rulings Under Review

References to the rulings at issue appear in the Brief for Appellant International Dark Sky Association, Inc.

C. Related Cases

These consolidated appeals raise issues that are closely related (and, in some instances, identical) to those before the Court in *Viasat, Inc. v. FCC*, 47 F.4th 769 (D.C. Cir. 2022).

/s/Pratik A. Shah

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GLOSSARY

FAA	Federal Aviation Administration
ITU	International Telecommunication Union
NEPA	National Environmental Policy Act

ISSUES PRESENTED

I. Whether the Federal Communications Commission's application of its radiofrequency interference rules to operation of the satellites at issue was arbitrary, capricious, or otherwise not in accordance with law.

II. Whether the Federal Communications Commission reasonably determined that the record lacked a sufficient basis for overcoming the categorical exclusion from further environmental processing under the National Environmental Policy Act.

STATUTES AND REGULATIONS

Relevant statutes and regulations are contained in the opening briefs.

INTRODUCTION

Less than a year ago in *Viasat, Inc. v. FCC*, 47 F.4th 769 (D.C. Cir. 2022), this Court rejected challenges, brought by two competitors and a putative environmental organization, to the Federal Communications Commission’s authorization for Space Exploration Holdings (“SpaceX”) to operate certain satellites. One of those competitors, DISH Network, reprises its radiofrequency interference arguments as directed to the Commission’s latest order (“Order”) granting in part SpaceX’s application to operate a tranche of newer-generation satellites. Meanwhile, a different organization, the International Dark-Sky Association (“Dark-Sky”), takes up the mantle for claims that the Order violates the National Environmental Policy Act (“NEPA”). *Viasat* forecloses most of the arguments pressed on appeal, however, and the challengers’ attempts to avoid that decision fare no better.

DISH continues to resist the Commission’s regulatory framework for analyzing radiofrequency interference. That framework requires an applicant to certify that its operations will comply with International Telecommunications Union (“ITU”) standards and methodologies, and then obtain ITU approval. But this Court has already held that the Commission is permitted to (i) decline consideration of DISH’s self-commissioned studies that depart from binding regulations, and (ii) rely on SpaceX’s certification, even taking into account the partial waiver that allows SpaceX to commence operations pending ITU review. DISH’s reliance on new

studies—all of which take liberties with the ITU-approved software or the relevant inputs—suffers from the same basic problems, while its subdelegation argument runs headlong into circuit precedent upholding agency decisions to incorporate into federal law standards developed by other expert bodies.

Separately, Dark-Sky makes the novel claim that NEPA required preparation of an environmental assessment. This Court did not resolve that issue in *Viasat* because the NEPA challengers lacked standing. Dark-Sky's appeal should be dismissed for the same reason, or at least substantially narrowed to issues germane to its organizational purpose (*i.e.*, light pollution, not atmospheric effects). If this Court reaches the merits, it should affirm the Commission's reasonable finding that the record was insufficient to overcome a NEPA regulation categorically excluding satellite operations from further environmental processing because such activity normally does not have a significant effect on the human environment.

In the end, both appeals are little more than collateral attacks on the Commission's regulatory framework for authorizing satellite operations. Such arguments must be raised elsewhere, outside of this licensing proceeding. This Court should affirm the Commission's Order.

STATEMENT OF THE CASE

1. SpaceX uses a constellation of low-Earth orbit satellites to deliver the world's first direct-to-consumer, high-speed, low-latency satellite internet service. Since 2018, the Commission has granted SpaceX various authorizations to operate first-generation satellites that “enable SpaceX to bring high-speed, reliable, and affordable broadband service to consumers in the United States and around the world, including areas underserved or currently unserved by existing networks.” *In re Space Exploration Holdings, LLC*, 33 FCC Rcd. 3,391, ¶ 1 (2018); *see* JA___, Order ¶¶ 4-5. Expanding that service thus “clos[es] the digital divide” and furthers the public interest in numerous ways, *e.g.*, eliminating the homework gap, facilitating telework and telehealth, improving precision agricultural technology, and supporting first responders and national security needs. JA___, Order ¶¶ 20-21; *see In re Space Exploration Holdings, LLC*, 36 FCC Rcd. 7,995, ¶¶ 8-13 (2021).

Recently, this Court rejected challenges to the Commission's grant of a license modification request concerning SpaceX's first-generation satellites. *Viasat*, 47 F.4th 769. In an appeal brought by DISH, the Court held that (i) the Commission was not required to consider certain studies conducted by DISH that used a different method for assessing radiofrequency interference than required by federal regulations, which incorporate power limits that the ITU sets in its capacity as the United Nations agency responsible for addressing signal interference internationally,

id. at 776; *see also id.* at 774-775; and (ii) the Commission reasonably granted SpaceX a waiver of the requirement to obtain ITU approval before commencing operations in view of ITU processing delays, while relying on SpaceX’s certification of compliance with ITU standards as confirmed by ITU-approved software, *id.* at 777-778. The Court also concluded that Viasat and The Balance Group lacked standing to pursue an appeal raising novel environmental claims under NEPA. *Id.* at 778-782.

2. While *Viasat* was pending before this Court, SpaceX filed an application with the Commission for authorization to operate roughly 30,000 second-generation (“Gen2”) satellites. JA___, Order ¶ 6. After considering voluminous filings by interested parties, JA___, Order ¶ 9, the Commission partially granted SpaceX’s application for a subset of 7,500 satellites, with explicit conditions. That partial grant did not increase the total number of satellites SpaceX would be authorized to deploy, in light of SpaceX’s decision no longer to launch 7,518 previously authorized “V-band” satellites. JA___, Order ¶ 19.

a. For its radiofrequency interference analysis, the Commission declined to “reconsider [its] rule relying on ITU review for evaluating compliance with [equivalent power flux-density] limits.” JA___, Order ¶ 27. That rule requires a non-geostationary orbit fixed-satellite service licensee to “obtain a favorable or qualified favorable finding from the ITU” concerning those power limits, “communicate the

ITU finding to the Commission,” and “submit the input data files used for the ITU validation software for public disclosure.” JA___, Order ¶ 26; *see* 47 C.F.R. § 25.146(a), (c).

Applying that framework, the Commission accepted SpaceX’s certification of compliance based on “ITU-approved validation software,” as required by Commission rules, JA___, Order ¶¶ 26-27, 31; *see* 47 C.F.R. § 25.146(a)(2), and declined to consider the substance of alternative analyses submitted by DISH, JA___, Order ¶¶ 27, 30. The Commission found that “SpaceX’s segmentation of its system into 18 separate ITU filings [was] reasonable as SpaceX [had] consulted ITU staff.” JA___, Order ¶ 31. In any event, SpaceX also submitted a single comprehensive filing that it certified as “demonstrat[ing] compliance with all applicable [power] limits,” and the Commission imposed a condition that SpaceX “obtain a finding from the ITU that explicitly indicates the ITU has considered the joint effect of SpaceX’s multiple ITU filings.” *Id.* The Commission rejected DISH’s request to submit its own analysis of SpaceX’s single data file on the record because the Commission’s decision was based on SpaceX’s certification and the ITU’s forthcoming review. JA___, Order ¶ 34.

Finally, the Commission found that it was “in the public interest to grant SpaceX’s partial waiver request and allow it to begin deployment as soon as possible” while awaiting a favorable ITU finding. JA___, Order ¶ 40. In doing so,

the Commission “emphasized” that “SpaceX must still obtain a favorable or qualified-favorable ITU finding” and, in the case of an unfavorable finding, “adjust its operations *** to come into compliance with all applicable EPFD limits.” *Id.* The Commission thus authorized SpaceX to commence operations “at SpaceX’s own risk.” *Id.*

b. “[A]ssum[ing], without deciding, that NEPA applies” to “space activities,” the Commission also analyzed whether NEPA required the preparation of an environmental assessment. JA ___, Order ¶¶ 103, 109; *see* JA ___, Order ¶¶ 103-125. Applying its categorical exclusion framework, the Commission concluded that the record did not support further environmental processing for the 7,500 satellites being authorized. JA ___, Order ¶¶ 104-112.

As to sunlight reflectivity, the Commission explained that “the record *** clearly demonstrates SpaceX’s continued commitment and efforts toward mitigating the impact of reflected sunlight on optical astronomy,” and imposed several “license conditions on SpaceX to ensure SpaceX’s authorized operations do not unduly burden astronomy and other research endeavors.” JA ___, Order ¶ 122; *see* JA ___, Order ¶¶ 92-102 (discussing same under public-interest standard). “[T]hese conditions, in addition to SpaceX’s planned mitigation efforts, are sufficient to avoid significant environmental effects, and therefore environmental review under NEPA is not warranted for these issues.” JA ___, Order ¶ 122. For essentially the same

reasons, the Commission concluded that “the record does not show that potential effects on the general public, plants, and animals may be significant.” JA__, Order ¶ 123.

As to atmospheric effects, the Commission “incorporate[d] *** into [its] own environmental review” the Federal Aviation Administration’s (“FAA”) assessment of SpaceX’s rocket launch activities, which had already found no significant environmental impact. JA__, Order ¶ 115. The Commission also determined that the record did not support a finding that reentering Gen2 satellites would introduce chemicals (*e.g.*, alumina) into the atmosphere in amounts that may have a significant environmental impact. While the objectors cited a Government Accountability Office study (“GAO Technical Assessment”) contemplating 75,000 (not 7,500) satellites, two European Space Agency studies “focusing specifically on atmospheric effects of reentering spacecrafts” had “conclud[ed] that the impact [of satellite reentry] was negligible compared to other anthropogenic activities.” JA__, Order ¶¶ 117-118.

3. Of the numerous parties that participated in proceedings before the Commission, JA__, Order ¶ 9, only DISH and Dark-Sky appealed. Notably, the Natural Resources Defense Council—which submitted comments jointly with Dark-Sky, JA__ [NRDC-Dark-Sky-Sept.-7-2022-Letter]—chose not to participate in Dark-Sky’s appeal. Neither DISH nor Dark-Sky sought a stay pending appeal, and

as of today SpaceX has deployed 580 Gen2 satellites (across 13 launches). This Court consolidated the appeals and granted SpaceX's motion to intervene.

4. On June 13, 2023 (after filing of the opening appeal briefs), the ITU published favorable findings for SpaceX's Gen2 system. *See* ITU, *EPFD data and EPFD examination results* (summary files for USASAT-NGSO-3M to USASAT-NGSO-3U-2 at pages 4-13 showing "favorable" findings), <https://www.itu.int/en/ITU-R/space/Pages/epfdData.aspx> ("*ITU EPFD results*").

SUMMARY OF ARGUMENT

This Court should affirm the Commission's Order.

I. DISH's challenges to the Commission's radiofrequency interference findings fail largely for the reasons laid out in *Viasat*. As required by the Commission's rules, SpaceX certified compliance with the ITU power limits using the approved software. The Commission was not obligated to add an additional layer of review to its regulatory framework and consider DISH's self-commissioned studies. Nor (as this Court has already explained) did the Commission act unreasonably in allowing SpaceX to commence operations pending ITU review. DISH's procedural argument concerning the data files that underlie SpaceX's certification misconstrues the record, and DISH's subdelegation argument fails under circuit precedent upholding the unexceptional agency practice of incorporating standards established by other expert bodies.

II. Assuming that NEPA applies to outer space activities (an open question), Dark-Sky fails to establish standing—especially for its arguments pertaining to atmospheric effects, which (unlike dark-sky-related issues) are not germane to its organizational purpose. On the merits, the Commission reasonably found that the record did not demonstrate that authorization of 7,500 satellites (a subset of the ~30,000 sought) would risk significant environmental impact with respect to either (i) sunlight reflectivity, where SpaceX was already using requested mitigation techniques and the Commission imposed conditions to ensure continued mitigation; or (ii) atmospheric effects, where the evidence demonstrated that the impact of satellite reentry is negligible and the FAA had found no impact related to rocket launches.

ARGUMENT

I. THE COMMISSION’S RADIOFREQUENCY INTERFERENCE DETERMINATIONS SHOULD BE UPHELD

DISH alone challenges the Order’s radiofrequency interference analysis. It argues that the Commission should have performed a technical review of DISH’s self-commissioned interference studies. But DISH’s latest appeal arguments—mostly a redux of those raised (and rejected) in *Viasat*, 47 F.4th at 776-778—amount to an impermissible collateral attack on the Commission’s existing regulatory framework. DISH’s attempts to avoid *Viasat* are unavailing.

A. The Commission Must Adhere To Its ITU-Based Regulatory Framework

The Communications Act confers upon the Commission broad authority and discretion to regulate radiofrequency spectrum—including through licensing—as public convenience, interest, and necessity require. 47 U.S.C. §§ 303, 307, 309, 316. To that end, the Commission is charged with (among other things) “[a]ssign[ing] bands of frequencies to the various classes of stations,” “prevent[ing] interference between stations,” and harmonizing federal law with “any international radio or wire communications treaty or convention, or regulations annexed thereto.” *Id.* § 303(c), (f), (r).

Pursuant to that authority, the Commission has established a robust regulatory regime governing satellite communications. *E.g.*, 47 C.F.R. pt. 25. When the Commission first established power limits for non-geostationary orbit satellite operators’ use of the 12.2-12.7 GHz band in 2000, it adopted ITU standards into its rules and required validation using ITU software: “After evaluating the extensive record in th[e] [rulemaking] proceeding, including the work of the [ITU Radiocommunication Sector] study groups and [the 2000 World Radiocommunication Conference], we find that the agreements reached in these international meetings provide the basis to allow [non-geostationary orbit fixed-satellite service] operations to share successfully the 12.2-12.7 GHz band with

[broadcast satellite service] operations without causing unacceptable interference.”

Ku-band NGSO FSS Allocation Order, 16 FCC Rcd. 4,096, ¶¶ 170-198 (2000).

In 2017, the Commission undertook notice-and-comment rulemaking to update those rules (DISH neglected to participate). The Commission elected to “incorporate by reference the relevant portions of Article 22 [of the ITU Radio Regulations],” which set forth power limits that avoid unacceptable interference. *NGSO FSS Order*, 32 FCC Rcd. 7,809, ¶ 42 (2017); *see* 47 C.F.R. § 25.108. As this Court has recognized, the incorporation of such technical standards into law is commonplace, and “[i]n fact, federal law encourages precisely this practice.” *American Soc’y for Testing & Materials v. Public.Resource.Org, Inc.*, 896 F.3d 437, 442 (D.C. Cir. 2018). “[L]ike any other properly issued rule,” the incorporated standard “has the force and effect of law.” *Id.* Indeed, the Commission made explicit that a non-geostationary orbit “licensee operating in compliance with the applicable equivalent power flux-density limits in Article 22” of the ITU Radio Regulations “will be considered as having fulfilled this obligation with respect to any [geostationary orbit] network” (like DISH’s). 47 C.F.R. § 25.289.

Ultimately, the Commission established a two-step process for licensing non-geostationary orbit operations within the 12.2-12.7 GHz band: (1) before licensing, certification of compliance with (incorporated) ITU power limits based on ITU-approved validation software; and (2) after licensing, receipt of a “favorable” or

“qualified favorable” ITU finding that operations comply with the limits. 32 FCC Rcd. 7,809, ¶ 41; 47 C.F.R. § 25.146(a), (c). Applicants were no longer required to submit a “comprehensive technical showing” to the Commission because, it determined, Commission staff review would be duplicative of certification using ITU software and ultimately ITU confirmation. 47 C.F.R. § 25.146(a)-(b) (2016); *see* 32 FCC Rcd. 7,809, ¶ 41. Noting that it “has adopted certification requirements for other satellite power limits [like those applicable to DISH], even in the absence of any technical review,” the Commission promulgated the two-step framework over certain commenters’ concerns about reliance on the ITU and purported shortcomings in the ITU’s software modeling and certification process. 32 FCC Rcd. 7,809, ¶ 41 nn.91-93.

In *Viasat*, this Court rejected DISH’s assertion that the Commission should have departed from those “binding regulations” in favor of a (self-proclaimed) “better method for calculating interference” developed by DISH’s experts. 47 F.4th at 776. Applying the “hornbook rule of administrative law” that an agency “must adhere to its own rules and regulations” and “should not *** entertain a challenge to a regulation, adopted pursuant to notice and comment, in an adjudication or licensing proceeding,” this Court held that there was nothing unreasonable about the Commission “following its own interference rules.” *Id.* (internal quotation marks

omitted). In fact, had it done otherwise, the Commission would have “abuse[d] its discretion” by “arbitrarily violat[ing] its own rules.” *Id.* The same holds true here.

B. The Commission’s Interference Analysis Was Not Arbitrary Or Capricious

The Commission fully discharged its statutory mandate to determine whether granting SpaceX’s Gen2 application serves the public convenience, interest, and necessity—including by assessing potential interference. As pertinent here, the Commission found that “SpaceX’s certification of compliance with the [equivalent power flux-density] limits, along with the conditions [the Commission] adopt[ed] *** , ensure that SpaceX’s Gen2 Starlink system will comply with th[ose] *** limits which should protect [geostationary orbit] operations from harmful interference.” JA__, Order ¶ 31 (footnote omitted). DISH’s contrary arguments are without merit.

1. The Commission was not required to consider the substance of DISH’s studies.

DISH argues (Br. 23) that the Commission unreasonably “refused to consider” DISH’s studies, based on the separate data files initially provided by SpaceX, purporting to undermine SpaceX’s certification of compliance with ITU standards. But “nothing in [the Commission’s] rules requires other parties’ independent confirmation of SpaceX’s [power-limit] analysis using the ITU software.” JA__, Order ¶ 34. Given that the Commission jettisoned the requirement for license *applicants* to submit “comprehensive technical showing[s]” because Commission

review would be duplicative of ITU review, 47 C.F.R. § 25.146(a)-(b) (2016); *see* 32 FCC Rcd. 7,809, ¶ 41, it would make little sense for the Commission to review purported technical showings submitted by those applicants' *competitors*. This Court should reject (again) DISH's improper attempt to backdoor a change to the Commission's established process in this licensing proceeding. *Viasat*, 47 F.4th at 776.

DISH points to no contrary authority. As this Court explained in *Viasat*, 47 F.4th at 776, *American Radio Relay League, Inc. v. FCC* addressed a failure to consider data submitted as part of a notice-and-comment rulemaking establishing a regulatory standard, not a license proceeding applying that standard. 524 F.3d 227, 240-241 (D.C. Cir. 2008); *cf. Sacramento Mun. Util. Dist. v. FERC*, 474 F.3d 797, 801-802 (D.C. Cir. 2007) (rejecting failure-to-consider-evidence challenge to public-interest determination as “collateral attack” on previously adopted tariff itself). Most of DISH's other authorities are inapt for the same reason.

DISH's sole case on self-certification, *Animal Legal Defense Fund, Inc. v. Perdue*, 872 F.3d 602 (D.C. Cir. 2017), also misses the mark. Under that decision, an agency's reliance on self-certification may be inappropriate in a “smoking gun” case “in which the agency actually knows with certainty that [a] self-certification *** is false”—*e.g.*, where the agency had already found that the licensee was “grossly and consistently out of compliance.” *Id.* at 618-619. But here, there are no

contemporaneous (or any) Commission or ITU findings of non-compliance; DISH points only to its *own* purported findings. Further, unlike in *Animal Legal Defense Fund*, SpaceX’s certification is not only backstopped by the requirement that it obtain a favorable ITU finding, *id.* at 617-618 (regime required only “availability for inspection” after self-certification), but also reinforced by the ITU’s favorable finding with respect to SpaceX’s first-generation system, JA__ [SpaceX-Oct.-17-2022-Letter-4-&-n.29].

2. *DISH’s studies skirt the Commission’s ITU-based framework.*

Even assuming a competitor’s studies could give rise to the sort of certainty of non-compliance discussed in *Animal Legal Defense Fund*, 872 F.3d at 618-619, DISH’s two studies do not speak to the relevant legal standard. As it did in *Viasat*, DISH failed to apply the ITU’s methodology to the Gen2 system that SpaceX actually proposed. 47 F.4th at 776.

With respect to its first study, DISH acknowledges that its “expert did not run the ITU software” and made various (incorrect) assumptions about the Gen2 system’s “power level[s].” DISH Br. 12; *see id.* at 27 (“DISH’s first Gen2 study *** had not used the software at all[.]”); *see also* JA__, Order ¶ 27 n.131. That is fatal under *Viasat*. *See* 47 F.4th at 776 (rejecting argument that Commission acted unreasonably because “reports use[d] a different method for assessing interference than what binding regulations require”). Contrary to DISH’s attempt to confuse the

record (Br. 26-27), the Commission was referencing that first study (not the second study) when it “decline[d] to consider the additional analyses submitted by DISH and Viasat analyzing Gen2 Starlink using software *modified* to evaluate *** compliance at different locations than the ITU-approved software.” JA__, Order ¶ 27 (emphasis added).

DISH’s second study purported to use the ITU software, but still failed to address the actual Gen2 system. After SpaceX submitted separate data files covering the entire proposed system (*i.e.*, nearly 30,000 satellites), DISH realized that the submission would pass muster under the ITU’s methodology. *See* DISH Br. 13 (arguing system would only “come close to violating the power limits”). To reach a different result, DISH “combined [the] 18 subfiles,” then ran its self-generated amalgamation through the ITU-approved software. *Id.* at 29.

As the Commission explained, however, “SpaceX’s segmentation of its system into 18 separate ITU filings [was] reasonable as SpaceX consulted ITU staff” on the appropriate way to provide the system data. JA__, Order ¶ 31; *see* JA__ [SpaceX-Aug.-19-2022-Letter-6-7] (explaining that segmentation was “in response to ITU staff guidance” and that ITU had “specifically advised SpaceX in the past to submit its data through multiple files”); *see also In re Space Exploration Holdings, LLC*, 36 FCC Rcd. 7995, ¶ 34 (“[T]he ITU is in the best position to determine whether SpaceX appropriately relied on multiple ITU filings in its analysis.”). That

is no different than how the Commission and the ITU have proceeded in the past.¹ Accordingly, DISH’s “characterization of SpaceX’s method *** as intended to manipulate the ITU process is not well founded.” JA___, Order ¶ 31.

In particular, DISH’s simplistic analogy—comparing SpaceX’s segmented filings to (among other things) “becoming a bantamweight by splitting a heavyweight boxer’s weight 18 ways”—is flawed. DISH Br. 13. In reality, the separate data files cover certain groups of Gen2 satellites and include values specific to those groups. They cannot simply be merged together into a single data file without making adjustments to other values specific to the system as a whole. *See* JA___ [SpaceX-Oct.-17-2022-Letter-2-3].

Beyond DISH’s deviations from the ITU’s methodologies, the Commission addressed DISH’s concerns by (i) requesting a “single” (*i.e.*, comprehensive) data file that the Commission would pass to the ITU; (ii) requiring SpaceX to “obtain a finding from the ITU that explicitly indicates the ITU has considered the joint effect” of the Gen2 system; and (iii) authorizing only 7,500 satellites, “roughly one quarter

¹ For example, Telesat submitted three filings for a system consisting of 117 satellites. *See* Technical Ex. at 29 in Attachment Exhibits & Narrative to Application, *In re Telesat Canada, Petition for Declaratory Ruling to Grant Access to the U.S. Market for Telesat’s NGSO Constellation*, IBFS File No. SAT-PDR-20170301-00023, Call Sign S2991 (Mar. 1, 2017). The Commission approved Telesat’s system, *see* 32 FCC Rcd. 9,663 ¶ 11 (2017), and the ITU found that it complied with ITU power limits based on the segmented filings, *see ITU EPFD results, supra* (June 2, 2018 & Sept. 29, 2020).

of SpaceX’s proposed *** constellation,” to “allow continued monitoring.” JA___, Order ¶¶ 19, 31, 32.

DISH argues (Br. 28) that those protective measures are inadequate because its second study “showed categorically” that SpaceX will be unable to obtain a favorable finding. Not true. DISH’s second study addressed a different data set (*i.e.*, a hypothetical system that DISH created using its own amalgam of data files), while SpaceX “confirm[ed]” that the actual system’s single data file, “when analyzed with the ITU-approved validation software,” also “compl[ies] with the applicable [power] limits.” JA___ [SpaceX-Oct.-27-2022-Letter-2]. Indeed, one need not speculate anymore: On June 13, 2023, the ITU published favorable findings for SpaceX’s Gen2 system. *See ITU EPFD results, supra.*

3. *DISH’s procedural arguments misunderstand the record.*

Focusing on SpaceX’s single data file covering all proposed ~30,000 Gen2 satellites, DISH now complains that it should have “had a timely chance to review or rebut” that filing “to the extent the Commission relied on [it].” DISH Br. 31-32. Whether framed as a matter of “due process” (Br. 32) or the Commission’s “[o]wn [r]ules” (Br. 40), that procedural challenge rests “on the mistaken premise that [the Commission] would be considering the substance of the combined data file—rather than focusing on SpaceX’s certification—in reaching [its] decision in this licensing proceeding.” JA___, Order ¶ 34. The stated purpose of requesting that data file was

“to facilitate ITU coordination.” *Id.* And because the Commission attached “decisional significance” (DISH Br. 43) to SpaceX’s certification, not the substance of the file, the file was not a “presentation directed to the merits or outcome of a proceeding” under 47 C.F.R. § 1.1202(a). *Id.* at 41. DISH’s contention (Br. 32) that the Commission “secret[ly]” relied on the comprehensive file is pure supposition.

DISH therefore pivots to arguing that if the Commission did not rely on that file, “it effectively had no basis for its decision apart from an unsupported declaration from SpaceX that it will be able to meet the power limits.” DISH Br. 33. But that is just another collateral attack on the regulatory framework’s reliance on self-certification—and one that gives short shrift to the legal and economic consequences that discourage false certifications. *See Viasat*, 47 F.4th at 776.

In any event, DISH’s subsequent actions (post-dating its appeal) confirm that earlier receipt of the single comprehensive data file could not have made a difference. *Contra* DISH Br. 32. After receiving the file, DISH prepared and submitted to the Commission (outside the administrative record) a third (irrelevant) study. DISH-Mar.-6-2023-Letter, IBFS File Nos. SAT-LOA-20200526-00055 & SAT-AMD-20210818-00105, Call Sign S3069. The Commission would not have reviewed that study for the same reasons it did not review DISH’s prior two studies: it had no obligation to consider competitor review of certifications. *See* pp. 15-16, *supra*. Nor did the study dispute validation of SpaceX’s data file (as submitted) with ITU-

approved software. Instead, DISH altered the Gen2 system by using a different geostationary orbit “avoidance angle” than SpaceX proposed, based on an erroneous (and self-serving) view of ITU requirements. SpaceX-May-9-2023-Letter-3-4, IBFS File No. SAT-MOD-20230215-00036.² Once again, the established regulatory framework forecloses DISH’s attempt to supplant the ITU as fact-finder.

4. *The Commission reasonably granted SpaceX a waiver of ITU approval before commencing operations.*

For the same reasons as in *Viasat*, it was not arbitrary or capricious for the Commission to grant SpaceX a “partial waiver *** so it may commence operations prior to receiving an ITU finding.” JA__, Order ¶ 37. As this Court has recognized, the Commission “may waive its rules,” including “the requirement of a favorable ITU finding, *** ‘for good cause shown.’” *Viasat*, 47 F.4th at 777 (quoting 47 C.F.R. § 1.3). “Good cause exists when particular facts would make strict compliance inconsistent with the public interest.” *Id.* (internal quotation marks omitted).

² DISH changed the proposed Gen2 system’s geostationary orbit exclusion angles to be identical with the angle used in the system’s power flux-density mask. Although ITU “recommendations” state that a power flux-density mask angle “implies” geostationary orbit exclusion angles, Recommendation ITU-R S.1503-2, Part C § 2.1 (Dec. 2013), that is not required—as evidenced by the ITU’s frequent approval of systems using different angles for those different purposes, *see ITU EPFD results, supra* (Sept. 21, 2021 & May 31, 2022) (approving Viasat’s DREBBELSAT-2 and DREBBELSAT-4 systems with different geostationary orbit exclusion and power flux-density mask angles).

Here, as before, the Commission explained that “it is in the public interest to grant SpaceX’s partial waiver request and allow it to begin deployment as soon as possible to bring next-generation service to unserved and underserved areas of the country and globally” in light of “the timeframe for expected ITU review of SpaceX’s filings.” JA___, Order ¶ 40; *see Viasat*, 47 F.4th at 777 (holding that Commission “reasonably granted a waiver to avoid long delays in the provision of internet service”). The Commission also “reasonably concluded that [SpaceX’s] certification of compliance would provide some assurance of no harmful interference.” *Viasat*, 47 F.4th at 777. “[E]mphas[izing] that this is only a partial waiver of [its] rules” and that “SpaceX must still obtain a favorable or qualified-favorable ITU finding,” the Commission “note[d] that deployment *** is at SpaceX’s own risk.” JA___, Order ¶ 40.

DISH argues (Br. 45-47) that the Commission “arbitrarily contradicted itself” by relying on the certification and ITU process, while partially waiving one (temporal) aspect of that process. But this Court has already rejected the argument that such a waiver is “illogical,” including because “future ITU review will neither prevent nor undo any current interference.” *Viasat*, 47 F.4th at 777-778. DISH fails to account for not only the fact “that the certification of compliance *** provide[s] some assurance of no harmful interference,” but also “the utility of requiring SpaceX to receive a favorable ITU finding in the future.” *Id.* at 777. “If the ITU should

make an unfavorable finding, SpaceX will have to eliminate interference going forward. In the meantime, other licensees may report any present interference through established regulatory channels.” *Id.* at 778 (citation omitted); *see* JA___, Order ¶ 40 (adopting same reasoning).³

In any event, as noted above (p. 10, *supra*), the ITU has now issued favorable findings for the Gen2 system—effectively mooted the waiver issue.

C. DISH’s Subdelegation Argument Is Meritless

In a further attempt to dismantle the regulatory scheme through a licensing proceeding, DISH contends (Br. 48-57) that the Commission impermissibly subdelegated to the ITU its duty to prevent interference. DISH misunderstands and misapplies the subdelegation doctrine.

As explained (pp. 12-14, *supra*), the Commission—exercising its considerable expertise—has promulgated rules incorporating “ITU Radio Regulations” into federal law, 47 C.F.R. § 25.108(c); requiring applicants to certify compliance with those regulations, *id.* § 25.146(a); and imposing a condition that a licensee “receive a ‘favorable’ or ‘qualified favorable’ finding by the ITU Radiocommunication Bureau,” *id.* § 25.146(c). All agree that the Commission’s “*independent* endorsement of [ITU power] limits,” DISH Br. 51 (emphasis added),

³ Tellingly, and contrary to its predictions in *Viasat*, DISH has reported no evidence of such actual interference from operation of SpaceX’s first-generation satellites. Commission Br. 46-47.

is perfectly consistent with this Court’s rule that “a federal agency entrusted with broad discretion to permit or forbid certain activities may condition its grant of permission on the decision of another entity *** so long as there is a reasonable connection between the outside entity’s decision and the federal agency’s determination,” *United States Telecom Ass’n v. FCC*, 359 F.3d 554, 567 (D.C. Cir. 2004). The fact that Congress “direct[ed] the Commission to harmonize federal law with international treaties,” DISH Br. 52 (citing 47 U.S.C. § 303(r)), makes the Commission’s imposition of that condition all the more reasonable, *cf. Union Pac. R.R. Co. v. Pipeline & Hazardous Materials Safety Admin.*, 953 F.3d 86, 89 (D.C. Cir. 2020) (rejecting subdelegation claim and expressing “no surprise that a statute which weaves state institutions into its program should lead the implementing agency to coordinate its action with aspects of state law”).

DISH nonetheless asserts that the Commission has gone “beyond making ITU approval a condition” because the statutory directive “makes ITU approval a floor, not a ceiling.” DISH Br. 51-53. But the subdelegation doctrine does not preclude the Commission from aligning its standards with the ITU’s. *National Constructors Ass’n v. Marshal*, 581 F.2d 960, 972 n.32 (D.C. Cir. 1978) (“Because the Assistant Secretary reviewed and found ‘suitable’ all GFCI’s that then bore the imprimatur of UL approval, he effectively adopted UL specifications, as they then stood, as his own. As such, he retained control of the process, so that no subdelegation of final

authority occurred.”) (citation omitted). As the Fifth Circuit has explained recently (drawing from this Court’s precedent), it is “a common and accepted practice by federal agencies” to incorporate standards established by private organizations into federal rules. *Texas v. Rettig*, 987 F.3d 518, 532 (5th Cir. 2021) (citing *American Soc’y for Testing*, 896 F.3d at 442). Indeed, “it would be anomalous to accord agency deference when an agency invented standards but not when an agency’s expertise led the agency to incorporate standards endorsed by experts in the field.” *Id.* (citing *Amerada Hess Pipeline Corp. v. FERC*, 117 F.3d 596, 601 (D.C. Cir. 1997)). None of those authorities requires the Commission, which has already conducted a rulemaking to assess the incorporation of ITU standards into its own license-approval process, to duplicate the ITU’s work.

In any event, the record makes clear that the Commission exercised independent, final authority regarding interference. The Commission’s requirement that SpaceX “obtain a finding from the ITU that explicitly indicates the ITU has considered the joint effect of SpaceX’s multiple ITU filings,” JA___, Order ¶ 31, goes above and beyond any ITU rule. And the Commission approved only “one quarter of SpaceX’s proposed *** constellation,” even though SpaceX certified the entire constellation would pass muster. JA___, Order ¶ 32. As such, the Commission did not “refuse[] to reserve for itself any final review authority,” DISH Br. 55, or “abdicate[] its decision-making authority[,] but merely created a reasonable ‘short-

cut,’ contingent on the approval of certain *** organizations, to satisfy one of the [Commission]’s own regulatory requirements,” *United States Telecom*, 359 F.3d at 567-568.

DISH thus resorts to arguing that the ITU “does not want the job” because sometimes “ITU’s software cannot adequately model the non-geostationary system.” DISH Br. 55. But it is undisputed that ITU software, which the Commission has determined to be the best available tool, *can* model SpaceX’s system. JA___, Order ¶ 27. DISH’s last-gasp argument (Br. 56) that the ITU’s role “robs DISH of its statutory right to appeal” ignores that DISH is currently exercising its statutorily defined right to appeal an “order of the Commission,” 47 U.S.C. § 402(b)(6).

II. THE COMMISSION’S ORDER DOES NOT CONTRAVENE NEPA

Of the various challengers that raised NEPA objections before the agency, Dark-Sky alone appeals the Commission’s findings that the preparation of an environmental assessment was not warranted on the record. Dark-Sky’s appeal—essentially identical to the unsuccessful one brought by Viasat and The Balance Group over SpaceX’s first-generation satellites, *Viasat*, 47 F.3d at 778-782—is fatally flawed. Like those prior appellants, Dark-Sky has not demonstrated its standing as a membership organization to raise at least certain issues before this Court.

Beyond that threshold hurdle, Dark-Sky comes up well short on the merits. Although the Commission declined to pass on the “novel question[]” of whether NEPA applies to activities in outer space, JA___, Order ¶ 109, Dark-Sky insists that “it does,” Dark-Sky Br. 38-39. This Court should take the opportunity to confirm that Congress limited NEPA’s regulatory scope to the human “environment and biosphere,” 42 U.S.C. § 4321; *see Metropolitan Edison Co. v. People Against Nuclear Energy*, 460 U.S. 766, 773 (1983) (construing NEPA to focus on actions that damage “air, land and water”) (emphasis omitted), while the Council on Environmental Quality (responsible for implementing NEPA) has clarified that a NEPA-triggering “Major Federal action does not include *** [e]xtraterritorial activities or decisions, which means agency activities or decisions with effects located entirely outside of the jurisdiction of the United States,” 40 C.F.R. § 1508.1(q)(1)(i). *See* Amicus Br. of TechFreedom; *see also Canonsburg Gen. Hosp. v. Burwell*, 807 F.3d 295, 304-305 (D.C. Cir. 2015) (“[A] reviewing court can (and should) affirm an agency decision on a legal ground not relied on by the agency if there is no issue of fact, policy, or agency expertise.”).

Assuming *arguendo* NEPA’s applicability to activities in space, however, this Court should affirm the Commission’s reasonable determination that Dark-Sky (and

others) did not satisfy the standard for further environmental processing under NEPA and the Commission's categorical exclusion framework.⁴

A. Dark-Sky Lacks Associational Standing (If Any) Beyond Sunlight Reflectivity

Dark-Sky's briefing and affidavits in support of associational standing raise serious questions as to whether its appeal is proper. For starters, it is "unclear" whether Dark-Sky exhibits "the indicia of a traditional membership association, such as a membership that finances the association's activities or plays a role in selecting its leadership." *Sorenson Commc'ns, LLC v. FCC*, 897 F.3d 214, 225 (D.C. Cir. 2018) (internal quotation marks omitted). Dark-Sky's opening briefing (at 9-14) is silent on the subject, and Dark-Sky's executive director affidavit merely describes the organization's purpose and points the Court to Dark-Sky's "member declarations," Dark-Sky Add. 109-111, which in turn describe leadership roles those members have held or hold in their capacity as Dark-Sky "volunteer member[s]," *id.* at 129; *see id.* at 119 ("I identify strongly as [a Dark-Sky] member and am proud to be associated with the organization as a volunteer, advocate, and committee

⁴ Time and again, Dark-Sky invokes recent amendments to NEPA regulations, but it ultimately concedes that "the Commission need not yet comply" with those amendments. Dark-Sky Br. 19 n.7; *see, e.g., id.* at 38 n.18 ("*When and if the amended CEQ regulations come into effect *** the Commission will be hard pressed to make a persuasive argument that regulation of the orbital environment can escape NEPA.*") (emphasis added). SpaceX thus limits its analysis to the 2020 rules that the Commission applied. *See* Commission Br. 10 n.2.

member.”). Accordingly, Dark-Sky “has given *** no insight into how it relates with its members.” *Viasat*, 47 F.4th at 781-782.

Even assuming Dark-Sky “is an organization eligible to assert standing on behalf of its members,” this Court must ensure that Dark-Sky “meets all three of the *** requirements for associational standing”: “(1) its members would otherwise have standing to sue in their own right; (2) the interests it seeks to protect are germane to the organization’s purpose; and (3) neither the claim asserted nor the relief requested requires the participation of individual members in the lawsuit.” *Center for Sustainable Econ. v. Jewell*, 779 F.3d 588, 596 (D.C. Cir. 2015) (internal quotation marks omitted). Although Dark-Sky appears to satisfy the first and third requirements, this Court should preclude Dark-Sky from pursuing environmental impact claims beyond sunlight reflectivity due to the conspicuous mismatch between organizational purpose and the other issues raised on appeal.

As this Court’s seminal decision on germaneness explains, the requirement serves the “important [goal] of preventing litigious organizations from forcing the federal courts to resolve numerous issues as to which the organizations themselves enjoy little expertise and about which few of their members demonstrably care.” *Humane Soc’y of the U.S. v. Hodel*, 840 F.2d 45, 57 (D.C. Cir. 1988). As such, an “organization’s litigation goals [must] be pertinent to its special expertise and the grounds that bring its membership together.” *Id.* at 56. Otherwise, “an organization

with a diverse membership could readily produce a sufficient number of members claiming constitutionally cognizable injuries from governmental actions, even if such actions had nothing whatsoever to do with the association's area of competence or reason for existence." *Id.* at 57. Indeed, "[a]n associational standing test allowing such suits could in theory permit organizational leaders to generate legal actions on issues of little concern even to injured members." *Id.*

Here, Dark-Sky avers only that its "organization[al] interests" and "mission is to protect the night from light pollution," and that it "advocates for the protection of the night sky from light pollution." Dark-Sky Add. 110 & n.2 (internal quotation marks omitted). Dark-Sky does not claim to have any organizational interest in the potential effect of satellite reentry and rocket launches on the atmosphere, and tellingly the standing section of Dark-Sky's opening brief (at 11-13) does not mention those subjects. Elsewhere, Dark-Sky states that it "cited evidence [below] relating to the significant effects reentry of satellites could have on the atmosphere and the environment." *Id.* at 8; *see id.* at 44. But citing evidence to an agency does not give rise to standing, and in this case the comments were jointly submitted with the National Resources Defense Council, which has elected not to participate in Dark-Sky's appeal. *Cf. Warth v. Seldin*, 422 U.S. 490, 499 (1975) ("[T]he plaintiff generally must assert his own legal rights and interests, and cannot rest his claim to relief on the legal rights or interests of third parties.").

Accordingly, Dark-Sky has failed to demonstrate “pertinence between litigation subject and organizational purpose.” *Center for Sustainable Econ.*, 779 F.3d at 597 n.9 (quoting *Human Soc’y*, 840 F.2d at 58-59). It follows that Dark-Sky’s appeal must be limited to (at most) sunlight reflectivity issues.

B. Dark-Sky Must Overcome The Commission’s Categorical Exclusion From Further Environmental Processing

On the merits, Dark-Sky’s NEPA challenge must be analyzed under the Commission’s categorical-exclusion framework.

1. Satellite licensing falls within the scope of the Commission’s categorical exclusion.

Under generally applicable NEPA regulations promulgated by the Council on Environmental Quality, federal agencies are required to “assess[] the appropriate level of NEPA review” for a “proposed action.” 40 C.F.R. § 1501.3(a). That determination is based on the likelihood of the action’s “significant effects,” as measured by the “potentially affected environment and degree of the effects of the action.” *Id.* § 1501.3(a)(1)-(3), (b). Some types of actions “[n]ormally do[] not have significant effects.” *Id.* § 1501.3(a)(1). So, in the interest of “efficiency,” agencies are obliged to “identify in their agency NEPA procedures *** categories of actions that normally do not have a significant effect on the human environment, and therefore do not require preparation of an environmental assessment or environmental impact statement.” *Id.* § 1501.4(a) (citation omitted).

When an agency determines that a particular action falls within a predetermined “categorical exclusion” from further environmental processing, it evaluates whether there are “extraordinary circumstances in which a normally excluded action may have a significant effect.” 40 C.F.R. § 1501.4(b). As such, “[c]ategorical exclusions are not exemptions or waivers of NEPA review; they are simply one type of NEPA review.” *United Keetoowah Band of Cherokee Indians v. FCC*, 933 F.3d 728, 735 (D.C. Cir. 2019). The decision to invoke the categorical exclusion, as well as the decision whether to override the exclusion, are both “entitled to substantial deference.” *City of New York v. ICC*, 4 F.3d 181, 186 (2d Cir. 1993); see *National Tr. for Historic Pres. in U.S. v. Dole*, 828 F.2d 776, 781 (D.C. Cir. 1987) (per curiam).

The Commission adopted categorical exclusions following notice and comment. 47 C.F.R. §§ 1.1306-1.1307. As the Commission explained at the conclusion of that process, its “Notice of Proposed Rulemaking had envisioned specifying *** the types of Commission actions that would have significant environmental impacts.” *In re Amendment of Environmental Rules*, 60 Rad. Reg. 2d (P&F) 13, ¶ 10 (1986). But “[u]pon further reflection *** and after considering the views of commenters, [the Commission] decided to specify only a limited class of actions for which complete environmental processing may be appropriate.” *Id.* The Commission reached that result because “[u]nder [its] existing rules, numerous

applicants ha[d] been required to submit environmental information for review by Commission staff. However, instances *** where the facts ha[d] shown a significant impact on the environment, ha[d] been rare.” *Id.*; see *Environmental Rules in Response to New Regulations Issued by the Council on Environmental Quality*, 51 Fed. Reg. 14,999, 14,999 (Apr. 22, 1986) (“Based upon the Commission’s experience, we have determined that the telecommunications industry does not generally raise environmental concerns. The comments filed in this proceeding support the Commission’s determination.”).

Consequently, the promulgated regulations “limit to three general areas the types of actions that require submission of Environmental Assessments,” all of which concern terrestrial impacts: “(1) actions in which proposed facilities will be located in ‘sensitive’ areas; (2) cases involving high intensity lighting; and (3) cases in which the level of [radiofrequency] radiation emitted from the communications facility would exceed [a certain regulatory] standard.” 60 Rad. Reg. 2d (P&F) 13, ¶ 11 (citing 47 C.F.R. § 1.1307). The regulations then “specify that actions not listed in Section 1.1307 are ‘categorically excluded’ from environmental processing because they normally have no significant impact upon the environment.” *Id.* ¶ 6 (citing 47 C.F.R. § 1.1306). Further environmental processing of categorically excluded actions might still occur “upon the motion of any interested person or upon the Bureau’s own motion,” but “[a]n Environmental Assessment [would be] required

only if the Bureau or Commission concludes that given the particular nature of or circumstances surrounding the otherwise categorically excluded application, environmental review is warranted.” *Id.* ¶ 6 & n.10 (citing 47 C.F.R. § 1.1307(c)-(d)).

Here, Dark-Sky hints at dissatisfaction with the Commission’s NEPA framework, emphasizing an “intrinsic *environmental* relationship between Earth and its orbital space.” Dark-Sky Br. 20-23. The Council on Environmental Quality, however, “has determined that the categorical exclusions contained in agency NEPA procedures as of September 14, 2020, are consistent with” its implementing regulations. 40 C.F.R. § 1507.3(a). Ultimately, Dark-Sky agrees (as it must) that satellite licensing falls within the Commission’s categorical exclusions.

2. *The Commission did not err in construing the relevant standard for overcoming the categorical exclusion.*

To prevail on its NEPA claim, Dark-Sky had to convince the Commission to deviate from the categorical exclusion by “setting forth in detail the reasons justifying or circumstances necessitating environmental consideration in the decision-making process.” 47 C.F.R. § 1.1307(c). That burden normally entails showing not just “that the action may have a significant environmental impact,” *id.*, but also that “extraordinary circumstances” justify further environmental processing of that categorically excluded action, 40 C.F.R. § 1501.4(b). *See City of New York*, 4 F.3d at 185-186 (denying NEPA challenge where action did not “have a significant

environmental impact, *much less* amount to extraordinary circumstances”) (emphasis added); *National Tr.*, 828 F.2d at 781 (“By definition, [categorical exclusions] are categories of actions that have been predetermined not to involve significant environmental impacts, and therefore require no further agency analysis absent extraordinary circumstances.”); *see also* Dark-Sky Br. 20 (accepting that “extraordinary circumstances” are necessary to establish that “normally excluded action may have a significant environmental effect”). The Commission nevertheless declined to reach the issue of “extraordinary circumstances” and proceeded to consider whether Dark-Sky met its burden under the “may have a significant environmental effect” standard. JA___, Order ¶¶ 110, 117.

In Dark-Sky’s view, it is enough to raise the mere “possibility” of “an environmental impact.” *E.g.*, Dark-Sky Br. 3, 34, 36. But it cannot be the case that *any* chance of *any* environmental impact is enough to compel an environmental assessment—least of all where, as here, the agency has promulgated a categorical exclusion covering the activity. That would drastically expand the scope of NEPA and render the categorical-exclusion framework pointless.

NEPA regulations leave no doubt that it remains the Commission’s purview to assess the “significan[ce]” of any alleged impact in terms of “the potentially affected environment and degree of the effects of the action,” bearing in mind that “[s]ignificance varies with the setting of the proposed action.” 40 C.F.R.

§ 1501.3(b). The Commission faithfully accounted for significance here, *see, e.g.*, JA___, Order ¶ 123 (“[T]he record does not show that potential effects on the general public, plants, and animals may be significant[.]”), while Dark-Sky elides that facet of the regulatory standard, *see* Dark-Sky Br. 3 (wording question presented as “whether the satellite authorization sought by SpaceX[] may have an environmental impact”).

Dark-Sky emphasizes (Br. 32-40) the “may” in “may have a significant environmental impact,” 47 C.F.R. § 1.1307(c), relying heavily on *American Bird Conservancy, Inc. v. FCC*, 516 F.3d 1027 (D.C. Cir. 2008) (per curiam). In that case, the Commission declined to prepare a programmatic environmental impact statement to assess the effect of communications towers on migratory birds in the Gulf Coast region. This Court vacated that decision on the ground that the Commission should have prepared at least a less-rigorous environmental assessment. In particular, the Court took issue with the Commission’s “demand for definitive evidence of significant effects” or “scientific consensus” as “a precondition to NEPA action” under the “may have a significant environmental impact” standard. *Id.* at 1033.

This case is easily distinguishable. Unlike in *American Bird*, the Commission here did not demand “definitive evidence” or “scientific consensus” of a “significant environmental impact” to overcome the categorical exclusion. Tellingly, not even

Dark-Sky can point to any such statement in the Order. *See* Dark-Sky Br. 34 (arguing that “the Commission *appears* to have required ‘definitive evidence’”) (emphasis added); *id.* at 41 (“[T]he Commission’s reasoning *could* be interpreted to *implicitly* demand certainty before requiring an [environmental assessment].”) (emphases added).

For good reason: the Commission’s decision rests on the straightforward ground that Dark-Sky did not make a sufficient showing of the potential for a significant environmental impact from the specific action at issue, which (for good measure) the record otherwise exposed as deficient. *See, e.g.*, JA___, Order ¶¶ 117-118 (finding that alleged impact “will not come to pass from our action today,” and that “the most relevant evidence in the record *** is sufficiently persuasive for us to conclude that there would not be a significant environmental impact associated with a constellation of 7,500 Gen2 Starlink satellites demising upon reentry”); JA___, Order ¶ 122 (concluding that imposed conditions will “ensure that there will not be a significant impact”). That further distinguishes *American Bird*, where this Court ultimately found that, “[b]ased on the record before the court, there is no real dispute that towers may have significant environmental impact” on migratory birds. 516 F.3d at 1033-1034 (internal quotation marks omitted).

At bottom, nothing in NEPA, its implementing regulations, *American Bird*, or other precedent strips the Commission of its responsibility to evaluate both whether

the risk of environmental impact is sufficiently plausible and whether the potential magnitude of that impact is significant enough to displace the categorical exclusion against further environmental processing. That must be true even with respect to claims of uncertain environmental effects. After all, “[s]ome quotient of uncertainty *** is always present when making predictions about the natural world,” *American Wild Horses Campaign v. Bernhardt*, 963 F.3d 1001, 1008 (9th Cir. 2020) (ellipsis in original) (internal quotation marks omitted), and it is an agency’s job to distinguish between uncertainties that meet the regulatory standard and those that do not. Consistent with that reality, courts apply a deferential standard of review to uphold decisions not to undertake further environmental processing under NEPA—even “despite some uncertainty.” *Id.* Accordingly, it is Dark-Sky, not the Commission, that misinterprets the standard for overcoming a categorical exclusion.⁵

⁵ Contrary to Dark-Sky’s suggestion (Br. 31-32), *American Bird* does not compel the Commission to conduct an environmental assessment simply because parties “request[ed] that the Commission prepare a programmatic Environmental Impact Statement (EIS) that would address the potential consequences of the proposed operations of all commercial satellite operators before authorizing further satellite deployment.” JA__, Order ¶ 108. An analysis “encompassing all commercial satellite licensing [would] be outside the scope of this licensing proceeding” and deviate from “the Commission’s categorical exclusion framework,” *id.*—which Dark-Sky does not challenge on its merits. *See American Bird*, 516 F.3d at 1032 (finding that Commission reasonably deferred consideration of issue to ongoing nationwide proceeding); *see also City of New York*, 4 F.3d at 185 (“The regulatory touchstone for exceptions to the categorical exclusion *** is the potential environmental impact of the ‘particular action’ before the agency[.]”).

C. The Commission's Record-Based Rejection Of The NEPA Arguments Was At Minimum Reasonable

The Commission's assessment of the record under the standard for overcoming a categorical exclusion withstands scrutiny, especially under the deferential standard of review on appeal. Although Dark-Sky posits that "the Commission failed to provide any reasoned analysis of certain environmental arguments and evidence resulting in an arbitrary and capricious treatment," the Order's 23-paragraph NEPA discussion (not counting cross-referenced material) is anything but "conclusory" and "non-existent." Dark-Sky Br. 24-31. As Dark-Sky itself admits, the Commission *does* explain why an environmental assessment is not warranted; Dark-Sky simply disagrees with the Commission's conclusions. *See, e.g., id.* at 27-28 (recounting that Order adopts SpaceX's representations on sunlight reflectivity, while characterizing them as "self-serving"); *id.* at 28-30 (describing Order's analysis of atmospheric effects as "lengthier").

Consequently, this is not a case where the Commission has failed to clear the "low hurdle" of explaining its decision by providing a "reasonably discern[able] *** analytical path" to a reviewing court. *Van Hollen, Jr. v. FEC*, 811 F.3d 486, 496-497 (D.C. Cir. 2016). Rather, it is a case in which Dark-Sky challenges the Commission's Order as irrational. In that regard, Dark-Sky does not come close to demonstrating that the Commission strayed beyond "a zone of reasonableness" as to

either sunlight reflectivity or atmospheric effects. *China Telecom (Ams.) Corp. v. FCC*, 57 F.4th 256, 264 (D.C. Cir. 2022).

1. Sunlight Reflectivity

As the Order summarizes, Dark-Sky “request[ed] that the Commission undertake environmental review based on concerns about the brightness of SpaceX’s satellites” in view of two impacts: “impacts on professional and amateur astronomy and impacts on the general public.” JA__, Order ¶ 120.

a. In terms of alleged “impact[s] to astronomy,” the Commission concluded that “the record *** clearly demonstrates SpaceX’s continued commitment and efforts toward mitigating the impact of reflected sunlight on optical astronomy.” JA__, Order ¶¶ 121, 122. Among other things: (i) “Gen2 Starlink satellites will use three advanced brightness mitigation techniques: dielectric mirror film, solar array mitigation, and darkening paint”; (ii) SpaceX’s “engineers have developed analysis software tools and adapted traditional optical engineering ray tracing software to better predict brightness for new satellite designs and concepts operation,” resulting in “geometry changes, material specifications, and maneuvering operations to reduce satellite brightness and aim reflected sunlight away from the Earth”; and (iii) “SpaceX continues to work with a wide variety of astronomers, observatories, and astronomy-related groups”—like the National Aeronautics and Space Administration and the National Science Foundation—“to help minimize the effects

of satellites on imagery,” including by “mak[ing] highly accurate satellite tracking details available so astronomers can avoid its satellites.” JA__, Order ¶ 96 (internal quotation marks omitted).

In addition, the Commission noted that Gen2 satellites continue to follow the astronomy community’s recommendation that “satellites be operated below 600 km,” meaning that “they do not reflect sunlight during the darkest parts of the night.” JA__, Order ¶ 101. Gen2 satellites are also expected to be darker than the first-generation satellites, which were already dimmer than visible to the naked eye. *See* JA__, Order ¶ 100 (discussing diminishment of first-generation satellites from 4.99 to 6.48 “apparent magnitude,” given recommendation that “satellites have an apparent magnitude of 7 or greater, an order of magnitude dimmer than visibility to the naked eye (the higher the apparent magnitude, the dimmer the object)”). As a result, the satellites at issue “will be bright enough to be visible to the naked eye” only “immediately after launch and orbit-raising and deorbit phases, as well as during collision avoidance burns”—a situation that SpaceX was already working to address. JA__, Order ¶ 96. But to ensure that SpaceX’s mitigation efforts would continue to address any environmental impacts, the Commission conditioned its licensing approval on a restriction of operations to below 580 km, continued coordination and collaboration with various organizations (including by formal

agreement), and regular reporting of efforts to protect optical astronomy. JA___, Order ¶ 122.⁶

Based on that record, the Commission “f[ound] that these conditions, in addition to SpaceX’s planned mitigation efforts, are sufficient to avoid significant environmental effects, and therefore environmental review under NEPA is not warranted for these issues.” JA___, Order ¶ 122. In doing so, the Commission observed that it was approving SpaceX’s application with respect to only 7,500 satellites, while commenters’ concerns were directed to a constellation of nearly 30,000 satellites. JA___, Order ¶ 102.

On appeal, Dark-Sky argues (Br. 37-40) that various studies indicate that sunlight reflectivity “may have a significant environmental impact” on astronomy. But Dark-Sky never addresses the Commission’s reasoning with respect to mitigation. That is a fatal omission. NEPA regulations expressly instruct that “[i]f an extraordinary circumstance [sufficient to overcome a categorical exclusion] is present, the agency nevertheless may categorically exclude the proposed action if

⁶ For example, the Commission ordered SpaceX to coordinate with the National Science Foundation “to achieve a mutually acceptable agreement to mitigate the impact of its satellites on optical ground-based astronomy.” JA___, Order ¶ 135ff. As publicly announced in January 2023, SpaceX has satisfied that condition. *NSF statement on NSF and SpaceX Astronomy Coordination Agreement*, NATIONAL SCI. FOUND. (Jan. 10, 2023), <https://new.nsf.gov/news/statement-nsf-astronomy-coordination-agreement> (discussing specific mitigations, which “can and should serve as a model for coordination among satellite operators and the astronomy community within the United States and beyond”).

the agency determines that there are circumstances that lessen the impacts or other conditions sufficient to avoid significant effects.” 40 C.F.R. § 1501.4(b)(1); *see Alaska Ctr. for Env’t v. U.S. Forest Serv.*, 189 F.3d 851, 860 (9th Cir. 1999) (affirming decision not to prepare environmental assessment because “conditions mitigating the environmental consequences of an action may justify an agency’s decision”); *Cabinet Mountains Wilderness v. Peterson*, 685 F.2d 678, 682 (D.C. Cir. 1982) (“[C]ourts have also permitted the effect of mitigation measures to be considered in determining whether preparation of an [environmental impact statement] is necessary.”). Dark-Sky presents no argument as to why the Commission acted unreasonably in determining that “SpaceX’s planned mitigation efforts[] are sufficient to avoid significant environmental effects.” JA__, Order ¶ 122.

The argument that Dark-Sky does offer misreads the Commission’s Order. According to Dark-Sky (Br. 38-39), the Commission “deviously” concluded that it could “avoid[] a NEPA analysis” altogether because it had considered astronomy concerns as part of its “public interest” assessment. But the Commission plainly did not skip over NEPA by cross-referencing its public interest assessment, where it had already discussed the astronomy issue and imposed the license conditions. JA__, Order ¶ 122 (“*As discussed above*, the record before us clearly demonstrates SpaceX’s continued commitment and efforts toward mitigating the impact of

reflected sunlight on optical astronomy.”) (emphasis added); *id.* (“*As discussed above*, we are monitoring this issue to ensure that our licensing action serves the public interest, and we have accordingly imposed license conditions on SpaceX to ensure SpaceX’s authorized operations do not unduly burden astronomy and other research endeavors.”) (emphasis added); *see* JA ___, Order ¶¶ 92-102. It was against the backdrop of that preceding discussion—in particular, the conclusion “that there will not be a significant impact”—that the Commission found no need to “conduct additional review under NEPA” beyond applying a categorical exclusion. JA ___, Order ¶ 122.

b. In terms of “impacts of satellite reflectivity on the general public,” the Commission “f[ound] that the record does not show that potential effects on the general public, plants, and animals may be significant, requiring an [environmental assessment].” JA ___, Order ¶ 123. Tracking its astronomy analysis, the Commission reasoned that “SpaceX expects that its Gen2 Starlink satellites will be darker than the first-generation satellites due to its brightness mitigation efforts,” and that “the conditions *** adopt[ed] today to reduce effects on astronomy services will also address these other satellite sunlight reflectivity concerns involving the general public.” *Id.*

Dark-Sky (again, fatally) does not take the mitigation evidence head on. Instead, it suggests that reliance on mitigation “implicitly recognize[s] there *existed*

effects to be mitigated.” *Dark-Sky* Br. 36. But “[t]he mere presence of mitigating measures will not trigger the need to prepare an [environmental assessment].” *Alaska Ctr. for Env’t*, 189 F.3d at 860. As explained (pp. 43-44, *supra*), it is appropriate for an agency to maintain a categorical exclusion, even where extraordinary circumstances are established, in light of mitigation evidence. 40 C.F.R. § 1501.4(b)(1); *Cabinet Mountains*, 685 F.2d at 682 (explaining that mitigation measures that “compensate for any possible adverse environmental impacts” mean “the statutory threshold *** is not crossed” and that “[t]o require an [environmental impact statement] in such circumstances would trivialize NEPA”).

Accordingly, *Dark-Sky* cannot point to mitigation as support for its claim of a potential significant environment impact. Meanwhile, the single study that *Dark-Sky* highlights on appeal (Br. 34) involved a “constellation profile” of “almost 78,000 spacecraft”—more than ten times the number that the Commission authorized in this proceeding and more than twice the number SpaceX sought—and couched its assessment “in the absence of substantial mitigations.” Connie Walker et al., *Dark and Quiet Skies for Science and Society: Report and recommendations*, U.N. OFFICE FOR OUTER SPACE AFFAIRS 28 (2020), <https://www.iau.org/static/publications/dqskies-book-29-12-20.pdf>. Given that record, the Commission’s decision not to order the preparation of an environmental assessment here is more than reasonable.

2. *Atmospheric Effects*

Dark-Sky's attacks on the Commission's assessment of alleged atmospheric effects—which have no connection to Dark-Sky's organizational purpose (pp. 30-32, *supra*)—are equally unpersuasive.

First, the Commission provided several reasons for finding that the standard for overcoming the categorical exclusion was not met for satellite reentry, which was alleged to result in the introduction of chemicals (*e.g.*, alumina) into the atmosphere that contribute to climate change. To begin with, the Commission “note[d] that [it is] not currently authorizing SpaceX to deploy all of its proposed 29,988 satellites, but rather a smaller subset of 7,500 satellites.” JA___, Order ¶ 117. As a result, “the parties’ estimated amount of alumina that could be introduced into the atmosphere will not come to pass from [the] action [being approved],” and “[b]ased on the record, [the Commission is] not convinced that reentering SpaceX Gen2 Starlink satellites may have a significant environmental impact.” *Id.*

Dark-Sky posits (Br. 28-29) that the Commission failed to explain how, “[a]part from an implicit reliance on math (and a presumption of a simple, linear relationship),” the limited authorization of 7,500 satellites matters. But Dark-Sky does not offer any reason to doubt that fewer satellites will decrease the environmental impact (if any) of satellite reentry. That is just the flipside of Dark-

Sky's (and others') objection that more satellites will increase the environmental impact. *See* JA___, Order ¶ 116 & n.437 (calculating alumina “[p]er satellite”).

Nor does Dark-Sky dispute that the discussion in the cited GAO Technical Assessment is keyed to 75,000 satellites—again, ten times the number of satellites authorized by the Commission here. JA___ [GAO-Technical-Assessment-12-n.13]. That evidence does not provide the Commission with a considered basis to conclude that reentry of 7,500 satellites may have a significant environmental impact. Indeed, the GAO Technical Assessment does not come to that conclusion even for 75,000 satellites; it merely identifies the general scientific relationship between certain types of particles and the atmosphere, and then qualifies its observations by noting that the literature to date “assumes a size distribution that might not be accurate.” JA___ [GAO-Technical-Assessment-i-10-17] (stating that “the size and significance of these effects are poorly understood due to a lack of observational data, and it is not yet clear if mitigation is warranted,” and noting generally that certain emissions “can” or “could” have particular effects). As a further qualification, the GAO Technical Assessment states that its discussion of “environmental effect” does not follow “the definitions used under [NEPA]” and eschews “comment[] on whether or how these effects should be analyzed, regulated, or mitigated under NEPA.” JA___ [GAO-Technical-Assessment-6-n.8]. If such meager evidence and outright speculation were enough to displace a categorical exclusion, the required showing

that the circumstances of a particular proposed action “may have a significant environmental impact” would be no requirement at all.

That fact alone is enough to defeat Dark-Sky’s appeal. But the record also includes other corroborating evidence: Two European Space Agency studies, which “followed the same approach but made their own assumptions using different models,” “agree that the atmospheric impact of spacecraft reentries is relatively low.” *On the Atmospheric Impact of Spacecraft Demise upon Reentry*, EUR. SPACE AGENCY (Aug. 11, 2022), <https://blogs.esa.int/cleanspace/2022/08/11/on-the-atmospheric-impact-of-spacecraft-demise-upon-reentry/>. As the Agency elaborated:

The main results show that the atmospheric short-term impact due to a single spacecraft demise is modest. The dispersion of the plume created by a large single reentry event induces an atmospheric ozone destruction on a regional scale with maximum peak ozone loss of less than 1% on the first day, becoming totally negligible after a week (thus much smaller than its natural variability).

Id.; see also JA___, Order ¶ 116 (“[T]he studies find reentering spacecraft accounted for ‘0.0006% to 0.0008% of global annual ozone loss,’ or ‘290,000 times less than the annual impact of the aviation sector and 650,000 times less than the annual impact of the road transportation sector.’”). Those studies are “the most relevant evidence in the record, focusing specifically on atmospheric effects of reentering spacecraft.” JA___, Order ¶¶ 117-118.

Acknowledging that the Commission could not have “dismissed” that evidence, Dark-Sky nevertheless posits that the European Space Agency “does not

warrant the same deference as that of a federal agency.” Dark-Sky Br. 29 n.13. That misses the point: whether or not the European Space Agency’s findings are entitled to deference, the Commission is assuredly afforded the latitude to credit studies that it finds persuasive. Dark-Sky is thus left to quote the Agency’s caveat that “[f]urther detailed assessments” may improve the studies’ models in light of “high-level uncertainties.” *Id.* at 29. But it is difficult to understand how a call for further refinement of studies that *undercut* Dark-Sky’s claim of a significant environmental impact demonstrates that the standard for overcoming a categorical exclusion has been met. *See* JA___, Order ¶ 118 (“Although the ESA studies are qualified by the need to gather additional observational data, we observe that most scientific studies could benefit from additional data, and thus we do not find that qualification significant enough to require the preparation of an EA in this case.”).⁷

Second, the Commission determined that it was not necessary to (re)examine the potential impact of rocket launches on the atmosphere because “another federal

⁷ The Commission’s determination is all the more reasonable given the conditions that SpaceX “work with the scientific community on this issue to explore methods to collect observational data on formation of alumina from satellite reentry, to implement reasonable methods that are discovered to the extent practicable, and to report findings from these measurements to the Commission annually.” JA___, Order ¶ 118. Although Dark-Sky disparages (Br. 29-30) those conditions as “good citizen” provisions, it never explains why they should be viewed suspiciously. *See Central Or. LandWatch v. Connaughton*, 696 F. App’x 816, 819-820 (9th Cir. 2017) (explaining that agency’s “provision for future monitoring d[oes] not conflict with NEPA’s ‘hard look’ requirement, particularly *** [where the agency’s] analysis was sufficient on its own”).

agency”—the FAA—“has taken responsibility for environmental review of SpaceX’s launch activities.” JA___, Order ¶ 115 & n.431. The FAA’s primary role is consistent with Congress’s directive that the “Secretary of Transportation is to oversee and coordinate the conduct of commercial launch and reentry operations, issue permits and commercial licenses *** authorizing those operations, and protect the public health and safety *** interests of the United States.” *Id.* The FAA discharged that duty by conducting multiple environmental assessments under NEPA, each of which found that SpaceX’s launch activities would not result in any significant environmental impact. JA___, Order ¶ 115 & nn.429, 432 (citing findings published in 2018, 2020, and 2022). The most recent assessment, completed in 2022, covered “increased launch activity *** through 2025” associated with the Falcon 9 launch vehicle that would deliver Gen2 satellites into orbit. JA___, Order ¶ 115.

“Given the FAA’s review of the rocket launches expected to be used to transport the Gen2 Starlink satellites,” the Commission saw no reason to “require SpaceX to prepare a separate [environmental assessment] with respect to rocket launches, which *** would simply duplicate the FAA’s review.” JA___, Order ¶ 115. Rather, the Commission—“[h]av[ing] every confidence the FAA has conducted, and will continue to conduct as necessary, thorough environmental reviews of SpaceX’s

launch activities”—sensibly “incorporate[d] the FAA’s analysis into [the Commission’s] own environmental review.” *Id.*

On appeal, Dark-Sky does not meaningfully dispute that further environmental processing would be duplicative of the FAA’s efforts. At most, Dark-Sky offers a single sentence on the subject, claiming without elaboration that “the Commission did not adequately or sufficiently demonstrate that the FAA addressed all of the specific concerns raised by the Appellant and others.” Dark-Sky Br. 44. But “[i]t is not enough merely to mention a possible argument in the most skeletal way, leaving the court to do counsel’s work, create the ossature for the argument, and put flesh on its bones. *** [A] litigant has an obligation to spell out its arguments squarely and distinctly, or else forever hold its peace.” *Schneider v. Kissinger*, 412 F.3d 190, 200 n.1 (D.C. Cir. 2005).

Unable to challenge the reasonableness of the Commission’s action, Dark-Sky contends (Br. 41-44) that the Commission’s rules forbid reliance on the FAA’s environmental assessments absent a preexisting written agreement. Not so. Section 1.1311(e) of the Commission’s regulations provides—without mentioning any such agreement—that an environmental assessment “need not be submitted to the Commission if another agency of the Federal Government has assumed responsibility for determining whether *** the facilit[y] in question will have a significant effect on the quality of the human environment and, if it will, for invoking

the environmental impact statement process.” 47 C.F.R. § 1.1311(e). Dark-Sky’s supposedly contrary authority consists of a regulation that is specific to the “construction, modification, or replacement of an antenna structure on Federal land,” which has no bearing here. *Id.* § 17.4(c)(vi).

In any event, the Commission did not simply “*assume* the FAA to be the lead agency in relation to atmospheric effects from launches.” Dark-Sky Br. 44. As the Commission explained, the FAA’s multiple environmental assessments have “long been clear” that “the FAA has taken responsibility for environmental review of SpaceX’s launch activities.” JA___, Order ¶ 115. It would be absurd to interpret the Commission’s regulations as precluding reliance on the FAA’s review absent a formal agreement to coordinate.

CONCLUSION

This Court should affirm the Commission's Order.⁸

Respectfully submitted,

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June 20, 2023

⁸ In the unlikely event this Court finds merit in either appeal, it should exercise its discretion to remand without vacatur. *See, e.g., Vecinos para el Bienestar de la Comunidad Costera v. FERC*, 6 F.4th 1321, 1332 (D.C. Cir. 2021). That remedy would be particularly appropriate here given: (i) that challengers contend the Order fails to consider certain evidence (DISH) or to explain its reasoning adequately (Dark-Sky); (ii) that the Commission could still find NEPA does not apply at all (assuming this Court does not resolve the issue); (iii) the mitigation of any interim harm from the Order's conditions and the alternative avenues for redress from the Commission should any actual harm materialize; and (iv) the substantial disruption to the public interest (and SpaceX) that would result from vacatur.

CERTIFICATE OF COMPLIANCE

The foregoing brief is in 14-point Times New Roman proportional font and contains 11,584 words, and thus complies with Federal Rule of Appellate Procedure 32(a), Circuit Rules 28(d) and 32(e)(1), and this Court's February 2, 2023 Order.

/s/Pratik A. Shah

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CERTIFICATE OF SERVICE

I hereby certify that on June 20, 2023, I electronically filed the foregoing with the Clerk of the Court of the U.S. Court of Appeals for the District of Columbia using the appellate CM/ECF system.

/s/Pratik A. Shah
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